

# Catterpillars of *Argynnis aglaja* (LINNAEUS, 1758) feeding on *Bistorta major*

(Lepidoptera, Nymphalidae)

by

ZDENEK FRIC, MARTINA KLIMOVA, VLADIMIR HULA & MARTIN KONVICKA

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Although in centre of interest since the beginnings of systematic lepidopterology, larval host plant ranges of individual butterflies remain a confusing theme even for well-known species. In particular, older literature (e.g., ECKSTEIN, 1913; KOCH, 1954; SCHWARZ, 1949, HRUBY, 1964) abounds with long lists of host plant names, which often have little in common with reality. This is partly due to the fact that older authors did not differentiate between plants consumed in wild and in captivity (some species can develop on plants that they cannot encounter in their biotopes, older larvae can finish development on diet that would be unsuitable for young larvae, etc.). Moreover, host plant use may vary across species' ranges. This had been studied in depth, e.g., in some checkerspots (Melitaeinae), such as Palaearctic *Euphydryas aurinia* (ROTTEMBURG, 1775) and *E. maturna* (LINNAEUS, 1758), or Nearctic *E. editha* (BOISDUVAL, 1852). These species exhibit impressively broad host ranges, but individual populations typically use only a few plant species that are available in their biotopes, and can be specialised in their preferences (see, e.g., WAHLBERG et al., 2001; SINGER et al., 2002; EHRLICH & HANSKI, 2004). Therefore, it is wise to consider only confirmed records from clearly specified areas for both ecological analyses and practical conservation. Indeed, most of modern authors (e.g., EBERT & RENNWALD, 1991; ASHER et al., 2001; BENES et al., 2002) do this, viewing old literary records with suspicion. However, caution does not preclude surprises.

In June 2004, while studying population parameters of *E. aurinia* (ROTT.) on wet meadows in environs of Karlovy Vary (Karlsbad), Czech Republic, we encountered nine half-grown caterpillars of Dark Green Fritillary, *Argynnis aglaja* (L.). It was a dull and relatively cold morning with overcast sky. Eight larvae were found on leaves of *Bistorta major* (three of them actively feeding) (colour plate 2, fig. 5), one rested on a tuft of *Sanguisorba officinalis*. We brought three of them to our field base and reared them to adults. Since use of *Bistorta* was surprising and we could not reject the possibility that it was due to a feeding mistake, we offered them the following plants: *Bistorta major*, *Filipendula ulmaria*, *Sanguisorba officinalis*, *Valeriana officinalis*, and, first of all, *Viola riviniana*. Regardless, they consumed solely *Bistorta*, entirely ignoring other plants, including the violet! After ten more days of feeding, the larvae successfully pupated and emerged into adults in about three weeks.

Recent mainstream literature (e.g., EMMET & HEATH, 1989; EBERT & RENNWALD, 1991; TOLMAN & LEWINGTON, 1997; SETTELE et al., 1999; ASHER et al., 2001) report only violets as host plants of *A. aglaja* (L.) in Central and Western Europe. Some older sources (e.g., KOCH, 1954; FORSTER & WOHLFART, 1955), and Russian authors that rely on older sources (KORSHUNOV & GORBUNOV, 1995; TUZOV et al. 2000) report *Bistorta major* as well, and HIGGINS & RILEY (1970) extend the list by including *Persicaria* spp. Some of the contradictions might be due to cryptic

lifestyle of *A. aglaja* (L.) larvae. For instance, EBERT & RENNWALD (1991) admit that they failed to find any larvae despite intensive searches. Some authors report that the larvae feed at night (SETTELE et al. 1999), but according to ASHER et al. (2001), their activity depends on weather, being diurnal in cool days and nocturnal in warm days. Possibly, the unusually cold weather at the locality in June 2004 (with temperatures repeatedly dropping below 0°C at night, and not exceeding 10°C at 10 a.m.) forced the larvae to feed during daytime, which allowed us to find them in relatively large numbers. In captivity, they fed mainly at nights.

Our observation thus considerably broadens natural host plant range of *A. aglaja* (L.) in Central Europe, confirming the claims of older authors. Notably, the butterfly is the only Holarctic *Argynnис*, *sensu lato*, which uses non-violet host. All other species, including North American *Speyeria SCUDDER*, 1872 (which is, together with *Fabriciana REUSS*, 1920 monophyletic with *Argynnис FABRICIUS*, 1807) reportedly use only *Viola* (cf. SCOTT et al., 1986; SIMONSEN, 2004). It is also the only *Argynnис* s.l. which is not declining in Central Europe (cf. SETTELE et al., 1999, BENES et al., 2002), which might be partly attributable to its broader trophic niche. Still, we cannot exclude the possibility that young larvae are more selective than older ones and feed first on violets and then switch to *Bistorta*. (Such switches occur, e.g, in some Melitaeinae species; cf. KONVICKA et al., in press). In any case, larval feeding habits and ecology of seemingly well-known *Argynnис aglaja* may offer further surprising discoveries, and deserve to be studied in more detail.

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#### Addresses of the authors

ZDENĚK FRIC, MARTINA KLIMOVA, MARTIN KONVICKA  
School of Biological Sciences, University of South Bohemia  
&  
Institute of Entomology, Czech Academy of Sciences  
Branisovska 31  
CZ-370 05 Ceske Budejovice

VLADIMÍR HULA  
Faculty of Agronomy, Mendel University of Agriculture and Forestry  
Zemedelska 1  
CZ-613 01 Brno

Colour plate 2, fig. 5: Caterpillar of the Dark Green Fritillary, *Argynnis aglaja* (L.), feeding on *Bistorta major* (Bochov environs, Czech Republic, 10.VI.2004).